By considering Fuzzy time, P=BPP (P*=BPP*)

The reasonability of considering time as a fuzzy concept is demonstrated in [7],[8].

One of the major questions which arise here is the new definitions of Complexity Classes.

In [1],[2],…,[11] we show why we should consider time a fuzzy concept. It is noticeable to mention that that there were many attempts to consider time as a Fuzzy concept, in Philosophy, Mathematics and later in Physics but mostly based on the personal intuition of the authors or as a style of Fuzzifying different various of the concepts. Consequently, fuzzifying time doesn't go to be popular. In the new attempts we are trying to show why we are somewhat forced to consider time as a Fuzzy concept. It is mostly based on the "Unexpected Hanging Paradox" introduced by a Swedish Mathematician Lennart Ekbom. Our question is:" what will be the impact of it in Theory of Computation and Physics?". Here, we discuss about the impact of fuzzifying time on Theory of Computation.

In this way, we easily obtain a random number generator by inventing an algorithm. It is sufficient to consider an algorithm that in interval times [2n,2n+1] it emits as an output 0 and in interval times [2n+1,2n+2] it emits 1. Now by considering time as a fuzzy concept it is seen easily that we have a random number generator.

By considering time as a fuzzy concept the definition of the class **P** changes to **P***.

Definition: **P*** is the class of problems for any pϵ **P*** and probability α we have a polynomial $Q_{\alpha,p}$ and an associated algorithm $A_{\alpha,p}$ for solving p by probability α such that $Q_{\alpha,p}$ is upper bound of time of computation.

Equivalently, for any pϵ **P*** (p as a language) and probability α we have an associated algorithm $B_{\alpha,p}$ and a polynomial $Q_{\alpha,p}$ as an upper bound of time of computation

xϵp → By probability α, $B_{\alpha,p}(x) = 1$

x/ϵp → By probability α, $B_{\alpha,p}(x) = 0$

This is equivalent to the definition of the class BPP.

Additionally, by considering time as a Fuzzy concept we have BPP*. It is easy to see that it defines the same class as BPP. Consequently

P*=BPP*(= BPP)

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